

This listing of claims will replace all prior versions and listings of claim in the application:

Listing of the Claims:

Claims 1-24. (cancelled)

25. (new) A method of preparing semiconductor wafers for measurement in a metrology tool comprising the steps of:

- a) heating the wafer in a heating chamber to remove contaminants from the wafer surface; and
- b) cooling the wafer in a separate cooling chamber thermally isolated from the heating chamber; and
- c) measuring the characteristics of the wafer with the metrology tool a predetermined time after the cooling step is completed.

26. (new) A method as recited in claim 25, wherein steps (a) (b) and (c) are repeated for a plurality of wafers.

27. (new) A method as recited in claim 26, wherein the time the wafers are heated is the same for the plurality of wafers.

28. (new) A method as recited in claim 26, wherein the time the wafers are cooled is the same for the plurality of wafers.

29. (new) A method as recited in claim 26, wherein the time between the end of cooling step and the beginning of the measurement step is the same for the plurality of wafers.

30. (new) A method as recited in claim 26, wherein the time between the end of the heating step and the beginning of the cooling step is the same for the plurality of wafers.

31. (new) A method as recited in claim 26, wherein

- (a) the time the wafers are heated is the same for the plurality of wafers;

- (b) the time the wafers are cooled is the same for the plurality of wafers;
- (c) the time between the end of cooling step and the beginning of the measurement step is the same for the plurality of wafers.

32. (new) A method as recited in claim 31, wherein the time between the end of the heating step and the beginning of the cooling step is the same for the plurality of wafers.